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Claims:

1. A network connection device for connecting an IP (Internet Protocol) network and a switched telephone network, comprising:

an IP network interface to the IP network;

5 a line interface to the switched telephone network;

a plurality of conversion processors, each of which performs conversion between data on the switched telephone network and an IP packet on the IP network;

10 a layer-4 switch connected between the IP network interface and the plurality of conversion processors, for forwarding an IP packet received from the IP network interface to a selected one of the plurality of conversion processors depending on a result of analyzing the IP packet at layer 4; and

15 a multiplexer for multiplexing data received from the plurality of conversion processors to output a data stream to the line interface.

2. The network connection device according to claim 1, wherein the layer-4 switch determines the selected one of the plurality of conversion processors depending on which one of a control packet and a data packet the IP packet is.

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3. The network connection device according to claim 1, wherein the layer-4 switch determines the selected one of the plurality of conversion processors based on a source address, a UDP (User Datagram Protocol) header, and a RTP (Real-time Transport Protocol) header of the IP packet.

4. The network connection device according to claim 1, wherein the plurality of conversion processors include at least one data conversion processor dedicated to conversion of data packet and at least one control conversion processor dedicated to conversion of control packet.

5. The network connection device according to claim 4, wherein the layer-4 switch forwards an IP packet to a data conversion processor when the IP packet is a data packet, and forwards the IP packet to a control conversion processor when the IP packet is a control packet.

6. The network connection device according to claim 1, wherein the multiplexer demultiplexes a data stream received from the line interface to transfer demultiplexed data to a selected one of the plurality of conversion processors depending on whether the demultiplexed data is control data.

7. The network connection device according to claim 6, wherein the plurality of conversion processors include at least

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one data conversion processor dedicated to conversion of data packet and at least one control conversion processor dedicated to conversion of control packet.

8. The network connection device according to claim 6,
5 wherein the layer-4 switch receives packets from the plurality of conversion processors to transfer them to the IP network interface.

9. A control method for a network connection device connecting an IP (Internet Protocol) network and a switched
10 telephone network, the network connection device comprising:
an IP network interface to the IP network;
a line interface to the switched telephone network; and
a plurality of conversion processors, each of which performs conversion between data on the switched
15 telephone network and an IP packet on the IP network,
the method comprising the steps of:
a) analyzing an IP packet received from the IP network interface at layer 4;
b) forwarding the IP packet to a selected one of the
20 plurality of conversion processors depending on a result of the step (a); and
c) converting the IP packet to data on the switched telephone network by the selected conversion processor.

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10. The control method according to claim 9, wherein the step (a) comprises the step of determining the selected one of the plurality of conversion processors depending on which one of a control packet and a data packet the IP packet is.

5 11. The control method according to claim 10, wherein the step (a) comprises the steps of:

determining whether a source address of the IP packet indicates a call agent;

when the source address of the IP packet does not
10 indicate the call agent, inspecting a UDP (User Datagram Protocol) header of the IP packet to determine whether a protocol type code of the IP packet indicates UDP;

when the protocol type code of the IP packet indicates UDP, inspecting an RTP (Real-time Transport Protocol)
15 header of the IP packet to determine whether a destination port number of the IP packet indicates an RTP port working on call connection;

when the destination port number of the IP packet indicates an RTP port working on call connection, determining
20 that the IP packet is forwarded to a conversion processor dedicated to conversion of data packet; and

when the source address of the IP packet indicates the call agent, when the protocol type code of the IP packet does not indicate UDP, or when the destination port number of
25 the IP packet does not indicate an RTP port working on call

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connection, determining that the IP packet is forwarded to a conversion processor dedicated to conversion of control packet.

12. The control method according to claim 10, further comprising the steps of:

5 demultiplexing a data stream received from the line interface to produce demultiplexed data; and

transferring the demultiplexed data to a selected one of the plurality of conversion processors depending on whether the demultiplexed data is control data.

10 13. A network system comprising:

an IP (Internet Protocol) network;

a switched telephone network including a service switching point;

15 a SS7 (signaling system No. 7) gateway allowing the service switching point to exchange SS7 signals;

a call agent; and

a voice over IP (VoIP) gateway for connecting the IP network and the switched telephone network, wherein the VoIP gateway comprises:

20 an IP network interface to the IP network;

a line interface to the switched telephone network;

a plurality of conversion processors, each of which performs conversion between data on the switched telephone network and an IP packet on the IP network;

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a layer-4 switch connected between the IP network interface and the plurality of conversion processors, for forwarding an IP packet received from the IP network interface to a selected one of the plurality of conversion processors depending on a result of analyzing the IP packet at layer 4; and

a multiplexer for multiplexing data received from the plurality of conversion processors to output a data stream to the line interface.

10 14. The network system according to claim 13, wherein the plurality of conversion processors include at least one data conversion processor dedicated to conversion of data packet and at least one control conversion processor dedicated to conversion of control packet.

15 15. The network system according to claim 14, wherein the layer-4 switch forwards an IP packet to a data conversion processor when the IP packet is a data packet, and forwards the IP packet to a control conversion processor when the IP packet is a control packet.